# 3 evaluate your planning results

## Overview

The evaluation step of the planning process allows the planning team to review the plan, the planning process, and the results of implemented actions. The evaluation assesses whether the planning process and actions have been effective, if the community's goals are being reached, and whether changes are needed. The planning team should periodically evaluate the community's progress in implementing the plan. Regular evaluation keeps the community informed of the plan's status and, ideally, keeps those responsible for implementing the mitigation actions motivated. These periodic evaluations may reveal the need for small changes that may not be necessary to incorporate into the plan annually, but that accumulate over time until large-scale revision to the plan is needed (see Step 4, *Revise the Plan*).

Communities that commit to conducting periodic evaluations give themselves the opportunity to determine the effectiveness of their procedures and recommendations, identify new areas of concern, and renew enthusiasm for the cause of hazard mitigation. This step will show you how to keep the planning team, the planning process, and the implementation actions effective. The result is a hazard mitigation process that people have confidence in, and are willing to support.

What you learn in this evaluation will be used to determine whether or not to revise the plan document, to be described in Step 4. By looking impartially at what took place the previous year, the planning team will create a foundation on which to base its revision of the plan and a trigger to re-invigorate the cause for hazard mitigation in the community.

DMA

**DMA 2000 requires communities** to evaluate their hazard mitigation plan at least every five years. The way in which this is to be done must also be documented in the plan. By including a provision in the adoption mechanism to evaluate the plan and the implementation process, you have a built-in mechanism to institutionalize and sustain the mitigation initiative beyond the creation of the original document.

**Communities that want credit** for their hazard mitigation plan under the Community Rating System (CRS) must evaluate their plan annually.

**The plan should also** be evaluated and revised following disasters, to determine if the recommended actions are appropriate given the impact of the event. The risk assessment should also be revisited to see if any changes are necessary based on the pattern of disaster damages.

**According to DMA 2000 requirements,** states that want to be eligible for the 20% share of HMGP funds must develop a process to assess the effectiveness of a mitigation activity after its completion.

**The evaluation phase should not** be anticipated with anxiety. If the planning team, citizens, government, and other stakeholders have diligently implemented the recommendations, the evaluation phase will give the community reasons to celebrate the success of its mitigation efforts.

# Procedures & Techniques

## Task A. Evaluate the effectiveness of the planning process.

To evaluate the results of your planning efforts, begin by stepping back and looking at the big picture. Governments must be highly accountable to their citizens and able to defend their decisions. Evaluating the planning process is a good way to discover if the plan is working for the good of your state, tribe, or community. A review of the planning process will give you an idea of how successfully mitigation has been integrated into your normal administrative processes so far, and what procedural areas may need to be refined or changed.

**DMA 2000 regulations** do not require annual evaluations. The recommendations presented here will help you to meet the five-year local update requirements.

The first year of the planning process is the most critical because you are beginning to implement the plan. While the energy and momentum generated during this phase of planning are still present, your state, tribe, or community may have established an annual review process at the time of adoption to address the unanticipated problems that may affect the success of your planning efforts. An annual review is also a good opportunity to reflect on whether certain relationships developed during the process should be enhanced, and to initiate new partnerships based on experiences from developing and implementing the plan. The planning team should take this opportunity to reflect on the processes used so far to engage partners and the public, to develop loss reduction priorities, and to finance projects.

***1. Reconvene the planning team.***

The first step in evaluating the plan is to reconvene the planning team. Ideally, the planning team was established as a permanent working group within your state, tribe, or community to oversee the development and implementation of the mitigation strategy. Even after the plan is adopted, the planning team should meet at least semi-annually to review the progress of the mitigation planning efforts.

At this point, however, your team may want to think about inviting new stakeholders to join during the evaluation. These meetings are a good opportunity to bring new members up to speed on the planning team's history, mitigation strategy, and planning process. Use **Worksheet #2: Evaluate Your Planning Team** to assist you in this task.

# Worksheet #2 Evaluate Your Planning Team step 3

| *When gearing up for the plan evaluation, the planning team should reassess its composition and ask the following questions:* | YES | NO |
|---|---|---|
| Have there been local staffing changes that would warrant inviting different members to the planning team? | | ✓ |
| **Comments/Proposed Action:** NA | | |
| Are there organizations that have been invaluable to the planning process or to project implementation that should be represented on the planning team? | ✓ | |
| **Comments/Proposed Action**: Hazardville Habitat for Humanity has been invaluable in assisting the relocation of former Raging River Views Park residents. The organization should be invited to participate in THORR. | | |
| Are there any representatives of essential organizations who have not fully participated in the planning and implementation of actions? If so, can someone else from this organization commit to the planning team? | ✓ | |
| **Comments/Proposed Action**: It is essential that the Department of Public Works be represented at each meeting because so many mitigation actions involve them. However, representatives from the department have been unable to attend meetings consistently since the development of the plan. THORR will work with the departments director to find consistent, active representation. | | |
| Are there procedures (e.g., signing of MOAs, commenting on submitted progress reports, distributing meeting minutes, etc.) that can be done more efficiently? | ✓ | |
| **Comments/Proposed Action**: Again, the Department of Public Works has been unable to provide timely progress reports of its mitigation actions. Administrative duties and paperwork have fallen through the cracks since the department has been assigned numerous new duties in Hazardville's mitigation efforts. Perhaps the department, in partnership with THORR, should approach the Town Council for funding for more department staff. | | |
| Are there ways to gain more diverse and widespread cooperation? | ✓ | |
| **Comments/Proposed Action**: THORR members believe that better publicity about mitigation actions will garner more interest from the public, affected/interested organizations, and state agencies. | | |
| Are there different or additional resources (financial, technical, and human) that are now available for mitigation planning? | ✓ | |
| **Comments/Proposed Action:** THORR has learned about new PDM funding. The state has asked that local jurisdictions submit applications for brick and mortar projects and risk assessments studies. | | |

*If the planning team determines the answer to any of these questions is "yes," some changes may be necessary.*

*2. Review your planning process.*

One of the first areas for the planning team to assess is the planning process itself. With a year of hindsight, you can now step back and see what you would have done differently had you known what you know today. Look at each of the key elements of your planning process, such as building the planning team, engaging the public, gathering data to conduct your risk and capability assessments, and coordinating with other agencies, and determine how well they worked. The following are some suggested questions to ask:

**a. Building the Planning Team.** In continually building your planning team, have you left anyone out? Are there roles that need to be clarified or better defined? Has the planning team met as agreed upon? Have meetings been productive? Are procedures for implementing, monitoring, and evaluating the plan being followed? Are the lead agency and staff still able to play the lead? Again, Worksheet #2 will help with this task.

**b. Engaging the Public.** When looking at public involvement, you may need to conduct a survey to gauge how the public perceived your planning effort. Determine whether stakeholders and citizens felt that they had enough opportunities to provide input; the extent to which they are now aware of their hazards and are willing to support your efforts; what they think of the progress you are making; and whether outreach efforts—public meetings, workshops, Web site, newspaper notices, etc. were effective. Ask them what they would like to see done differently to involve them or keep them informed. In many cases, this may be a matter of simply asking residents if they now understand what hazards they are susceptible to, and what "hazard mitigation" means to them.

**c. Data Gathering and Analysis.** Are data gathering procedures working? Did someone follow up with the local university or other agencies to obtain research findings or reports that were not available during the planning process? Have team members provided copies of studies that their agencies or organizations completed? Are there more efficient methods of collecting data and maintaining up-to-date information from established sources?

### Evaluating Public Involvement in Hazard Mitigation

Surveys are a good tool to assess how well your public education and outreach projects are working, how the community perceives your hazard mitigation planning efforts, and to obtain feedback on proposed mitigation actions. Following are a few sample questions to ask:

- Do you have a greater understanding of the hazards to which you are susceptible? On a scale of 1-5 (1=very little; 5=a great deal), how much more do you know than you knew before planning efforts began?
- Do you now have a greater understanding of what you and your community can do to lessen the effects of natural hazards? (1=very little; 5=a great deal)

**d. Coordinating with other Agencies.** How well did coordination work? Did agencies have sufficient notice for meetings? Did they have enough time to review the draft plan? Have agreements been followed? Do MOAs need to be revised, due to changes in funding, priorities, staffing, or other events?

Look at what worked and what didn't as you prepared and implemented the plan, and identify ways to improve the process.

## Task B. Evaluate the effectiveness of your actions.

Measuring the effectiveness of your programs, policies, practices, and projects is another important element of your evaluation. If your plan called for strategies with a relatively short implementation time frame, their overall success can be evaluated if they have been completed. Additionally, you can assess actual losses avoided as a result of projects implemented following a disaster. Most mitigation projects, however, are done gradually, as resources and conditions allow. The progress to date of these projects can therefore be evaluated by reviewing whether the project is on time, in line with the budget, and moving ahead as planned. Now is the time to gather data to assess your progress toward meeting your objectives, and ultimately meeting your plan goals. This is also a good time to pull together the progress reports agencies submitted to you periodically. These will enable you to answer the questions that follow and help your planning team evaluate how effective the mitigation projects and actions have been. Use **Worksheet #3: Evaluate Your Project Results** to assist you in completing this task.

***1. What were the results of the implemented actions? Did the results achieve the goals/objectives outlined in the plan? Did the actions have the intended results?***

Review the goals and objectives of your plan. Be able to show how (or whether) the project met the objective it was designed to achieve. This is where you can measure the results of the project against the identified indicator of success.

Sometimes projects have unintended results, which can be good if they provide an extra benefit to the state or community, or not as good if they did not achieve or protect everything to the extent planned. Examples of unintended results can extend to environmental, social, or economic impacts.

**If you received federal funds** for the project, you have been submitting quarterly reports to the responsible agency on its progress. These quarterly reports will be very helpful in showing the project's current status, such as percentage complete, total project costs obligated versus amount spent, problems with implementation, and anticipated completion date.

# Worksheet #3 Evaluate Your Project Results step 3



Project Name and Number:

Raging River Views Park Flood Acquisition Project (HVMP-2003-01)

Project Budget:

$360,000

Project Description:

Acquisition and demolition of 14 flood-prone structures

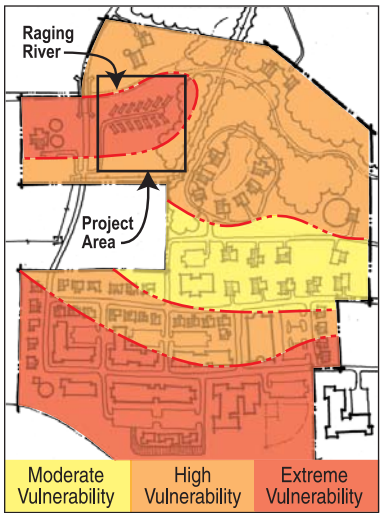
Associated Goal and Objective(s):

*Goal:* Minimize losses to existing and future structures within hazard areas

*Objective:* Reduce potential damages to the manufactured home park in the floodplain

Indicator of Success (e.g., losses avoided):

Losses avoided by acquisition and demolition of flood-prone structures




**Town of Hazardville Composite Loss Map developed previously during risk assessment (see FEMA 386-2).**

**Was the action implemented?** ☑ **YES** ☐ **NO**

**IF NO**

| **Why not?** | **YES** | **NO** |
|---|---|---|
| Was there political support for the action? | ☐ | ☐ |
| Were enough funds available? | ☐ | ☐ |
| Were workloads equitably or realistically distributed? | ☐ | ☐ |
| Was new information discovered about the risks or community that made implementation difficult or no longer sensible? | ☐ | ☐ |
| Was the estimated time of implementation reasonable? | ☐ | ☐ |
| Were sufficient resources (for example staff and technical assistance) available? | ☐ | ☐ |

**IF YES**

What were the results of the implemented action?

Of the 14 proposed properties, 10 were acquired. The benefit-cost ratio is 2.19, based on project benefits of $789,000 and costs of $360,274. Benefits are based on the net present value of the avoided damages over the project life. Furthermore, about 40 people are no longer in the path of a potential flood, making emergency rescue operations in that area less likely and evacuation easier.

| | YES | NO |
|---|---|---|
| Were the outcomes as expected? If No, please explain: | | ✔ |
| The project originally set out to acquire 14 properties. Four of the 14 owners did not want to participate in the buyout program. | | |
| Did the results achieve the goal and objective(s)? Explain how: | ✔ | |
| Despite four properties still in harm's way, the objective has been largely met. See additional comments. | | |
| Was the action cost-effective? Explain how or how not: | ✔ | |
| The FEMA Limited Data module was used to perform the benefit-cost analysis. Data for the analysis was collected from historical flood data and used as benchmarks in the before mitigation section of the analysis. The damages after mitigation section was left blank, due to the properties being permanently acquired, and the economic risk removed completely. The analysis resulted in a benefit-cost ratio of 2.19, with benefits totaling $789,000 for 10 properties. | | |
| What were the losses avoided after having completed the project? | | |
| Total avoided losses are $789,000 over the lifetime of the project (estimated at 100 years). | | |
| If it was a structural project, how did it change the hazard profile? | | |
| N/A | | |
| Additional comments or other outcomes: | | |
| The Planning Department has agreed to work with the remaining four homeowners in evaluating other flood-proofing options. | | |

Date: October 12, 2005

Prepared by: Hazardville Department of Economic Development

Hazardville Department of Planning

## Sample Indicators to Measure Progress in Reducing Risk

There are a variety of ways to measure effectiveness of mitigation actions. You can look at dollar amounts in losses avoided, both expected (prior to implementing a project) and actual (following a disaster). You can also look at how the mitigation actions have changed the number of households, businesses, critical facilities, and environmental assets that are at risk. Some other indicators are listed below.

For more on indicators, see the publication *Hazard Mitigation in North Carolina: Measuring Success*, Chapter 6 available online at http://www.dem.dcc.state.nc.us/Mitigation/Library/Success_Stories/Measuring_Success_Vol2/Chapter6.pdf.

| **Housing** | **Business** |
|---|---|
| Number of households living in unsafe areas. | Number of businesses in unsafe areas. |
| Number of households living in structures that are vulnerable to natural hazards. | Number of businesses in unsafe structures. |
| Number of repetitively damaged houses. | Number or percentage of businesses that have purchased adequate insurance to cover property casualty, fire, liability, loss of revenue, and flood damage. |
| Losses avoided as a result of the implementation of acquisitions. | |
| Losses avoided as a result of the implementation of elevations-in-place. | Number or percent of businesses that have conducted a business impact analysis, and have developed and implemented a business risk reduction plan. |
| **Infrastructure and Critical Facilities** | **Environment** |
| Number of infrastructure elements – water supply, roads, bridges, sewerage, telecommunications, port facilities – that are located in areas that are hazard-prone. | Number of unsafe land use activities that take place in the 100-year floodplain or in environmentally sensitive areas. |
| Number of repetitively damaged infrastructure elements. | |
| Number of critical facilities – hospitals, emergency operations centers, police and fire stations, schools – that are located in areas that are hazard-prone. | Number of commercial or industrial facilities in the 100-year floodplain that have undertaken structural or non-structural mitigation measures. |
| Number of repetitively damaged critical facilities. | |

*Source: Hazard Mitigation in North Carolina: Measuring Success, February 2000.*

***2. Were the actions cost-effective? Did (or would) the project result in the reduction of potential losses?***

It is not always enough to say whether an action was generally effective or not, especially when considering publicly funded projects. This is particularly true for mitigation actions that may require a subsequent hazard event to truly determine effectiveness. Absent an event, the potential losses avoided can be estimated for most "brick and mortar" mitigation projects. The term "brick and mortar" mitigation actions in this context refers to projects such as retrofit, acquisition, demolition, or relocation, and flood works such as levees, dams, and floodwalls.

One of the most important indicators to evaluate the effectiveness of mitigation actions undertaken by the state, tribe, or community is **Losses Avoided**. This indicator provides a dollar value estimate of the structural, content, and displacement costs that would have occurred if the mitigation action were not taken. The losses avoided are most easily estimated for structural mitigation actions. Surveys and qualitative statements may have to suffice as indicators for educational or regulatory actions and to address other objectives that may be associated with specific mitigation actions.

If the cost-effectiveness of the hazard mitigation projects implemented was originally determined by benefit-cost analyses (BCA), the planning team may consider reviewing the old BCA to determine whether the costs and benefits were close to what was estimated, or whether there were unforeseen costs or benefits. The point of revisiting the BCA is to re-calculate what losses would actually be reduced if the event were to occur. If possible, repeat relevant portions of the risk assessment to see if the project reduced potential losses. If HAZUS was used to develop the initial loss estimate, you may want to re-run it using the post-project results.

An initiative that did not have a BCA performed still can be objectively evaluated for its cost-effectiveness. Projects that do not lend themselves to benefit-cost analyses (e.g., education and outreach campaigns) or those projects where public values and ethical considerations ended up weighing more heavily on the final selection of an action than the results of a BCA, may require other methods, such as surveys, to gauge their effectiveness.

Whether you used BCA or other defensible methods to determine the cost-effectiveness of your actions, remember to document your results. Citizens, as well as state, local, and federal officials, will want to know of the losses avoided or benefits gained from your

### Displacement Costs

The dollar amount it would cost for a function (business or service) to be relocated to another structure because of a hazard event. In the case of residents, this would be the cost to relocate individuals or families to temporary housing.

**Cost-effectiveness is a key** evaluation criterion for federal grant programs. Cost-effectiveness has several possible definitions, although for grant-making purposes FEMA defines a cost-effective project as one whose long-term benefits exceed its costs. An easier way to say this is that a project should prevent more expected damages over the course of its effective "life" than it costs to fund the effort. This is done to ensure that limited public funds are used in the most efficient manner possible. Benefit-cost analysis is one way to illustrate that a project is meritorious and deserves funding.

**Be sure to stay in touch** with your state on a regular basis to ensure that you remain aware of any changes to state mitigation goals or priorities. Similarly, states must communicate such changes to all localities.

implemented actions. Let them know that their tax dollars are being well spent.

***3. Document actions that were slow to get started or not implemented.***

It is important to include a discussion of why certain actions were slow in getting underway, never finished, or didn't get started at all. The project may have been delayed or removed from the list of actions because of an unforeseen problem with the implementation. In the case of an elevation, acquisition, or relocation project, for example, the voluntary nature of the program gives the homeowner or business the right to change their minds *at any time*, all the way up to just before the physical work on the project begins or any financial compensation has been received.

### Task C. Determine why the actions worked (or did not work).

After verifying that an action was or was not implemented and its overall results, the planning team should try to document why the action worked or did not work. If a mitigation activity or project was unsuccessful, it is important to ascertain why so that more appropriate alternatives can be developed next time. If a mitigation project ends up being only partially implemented, it is important to get to the root cause, such as exceeding the budget. On the other hand, be sure to evaluate and document what did work successfully, and why. Understanding the factors that contributed to the success of a project, program, or policy is particularly important when you want to replicate or expand it. Use **Worksheet #3** to complete this task.

Several considerations to examine include:

- Availability of resources;
- The political or popular support for or against the action;
- The availability of funds;
- The workloads of the responsible parties; and
- The actual time necessary to implement the actions.

**Be sure to publicize** this information to other communities within the state. Don't be shy about it, either—let other states and FEMA know about your successes! If possible, also communicate caveats and warnings as a result of less positive outcomes. Everyone will benefit from lessons learned.

## After a Disaster Strikes

If a disaster strikes after you have completed your hazard mitigation plan, don't let the document sit on the shelf—it is a valuable resource for the long-term recovery and reconstruction of your community. The initial period following a disaster can be very chaotic. So many issues require attention that any thoughts of long-term recovery are crowded out by immediate recovery efforts. Critical life and safety issues come first: search and rescue operations, treating the injured, re-establishing vital public services, and providing emergency shelter. But once the task of clearing debris is well underway, community decision-makers need to shift their attention to long-term recovery. This is the opportunity to reconvene the mitigation planning team and evaluate the list of hazard mitigation priorities in light of the recent disaster.

Critical policy issues that emerge following disasters require local governments to make difficult decisions about how best to rebuild. Disaster victims have an inherent desire to rebuild rapidly and return to normal—to the way things were before the disaster. Communities, however, must balance this need against the objective of building back better and stronger, and use the opportunity of the disaster to improve the community's disaster resilience. Pressure to restore normalcy can be so strong that safety, hazard mitigation, and community improvement goals can be compromised or abandoned. Communities have a very short period of time to introduce, and gain acceptance of, new approaches to reconstruction. The mitigation plan will provide an excellent foundation for introducing these new approaches.

The diagram on the following page shows how a disaster triggers the need to re-evaluate all aspects of the mitigation planning process to determine if changes are now warranted.

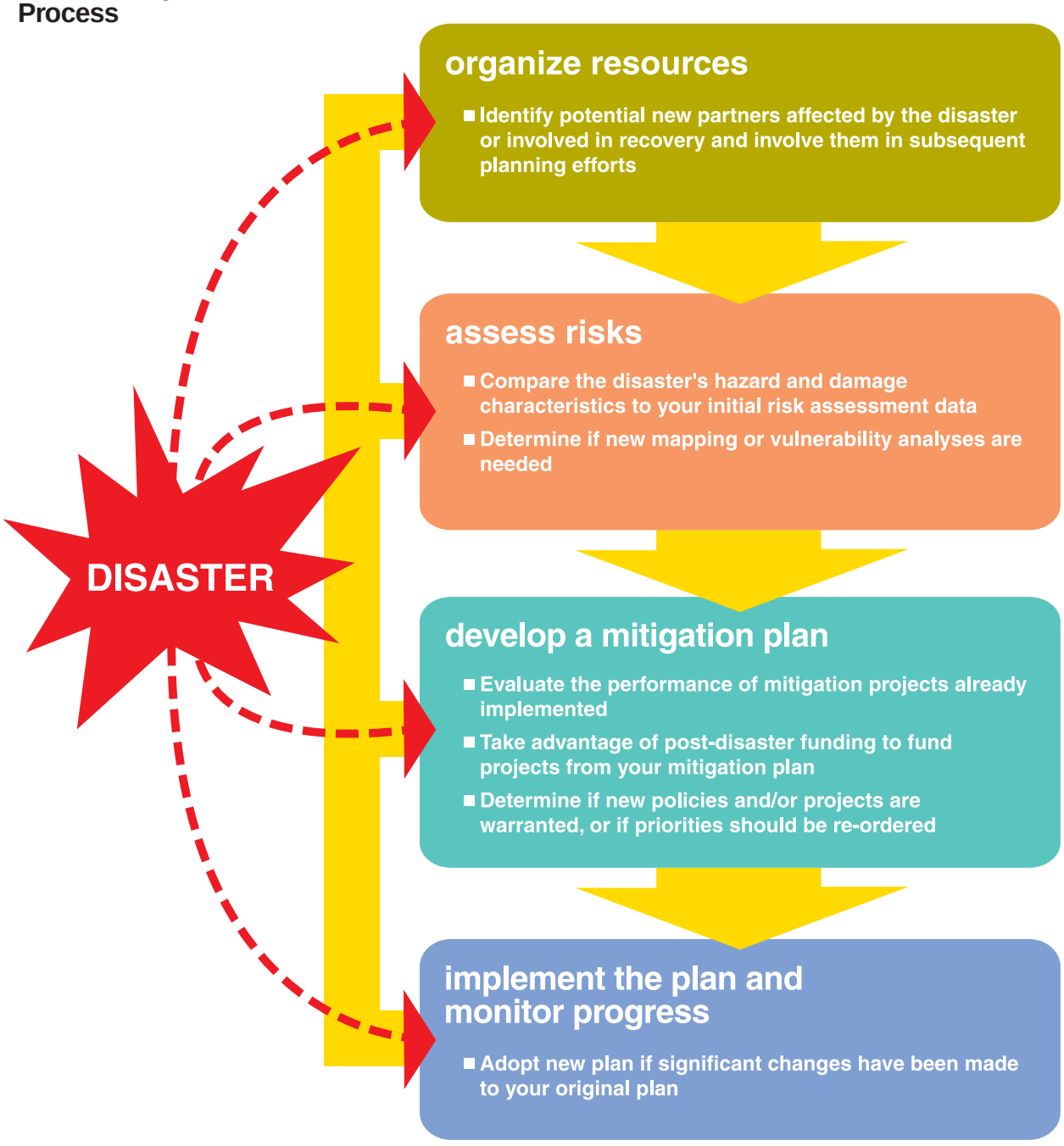
**1. What opportunities for hazard mitigation are presented in light of the disaster damages?**

If the hazard mitigation plan included a post-disaster recovery and reconstruction component to the implementation strategy, this section of the plan should be the initial focus for the recovery task force. Did the plan anticipate the type and intensity of disaster damages that actually occurred? Are there "off-the-shelf" mitigation actions that are relevant for this recovery effort? Are there other priority hazard mitigation actions that have not been implemented due to a lack of available resources?

*(continued on page 3-13)*

**Identifying potential mitigation** projects in a post-disaster scenario is the highest priority task for the planning team or recovery task force and the most time sensitive one. In a major disaster that has a presidential declaration, make sure that the SHMO and FEMA mitigation staff working out of the Disaster Field Office (DFO) have a copy of the hazard mitigation plan and have a clear understanding of community priorities for potential mitigation actions. State and federal mitigation planning staff can provide technical assistance to your community if necessary.

## After a Disaster: Re-evaluate Your Mitigation Plan and the Planning Process



## Applying for HMGP Funding

The purpose of the HMGP is to reduce the loss of life and property from natural disasters and enable mitigation actions to be implemented during the recovery process following a presidential disaster declaration.

**Eligibility.** Individual homeowners and businesses are not eligible, but a community may apply on their behalf. State governments, tribes and other tribal organizations, and certain nonprofit organizations are eligible, in addition to local governments.

**Project possibilities.** All eligible projects must provide a long-term mitigation solution. Additionally, a project's potential savings must be more than the cost of implementation. Funds may be used to protect either public or private property. Examples of possible projects include, but are not limited to: property acquisition and relocation/demolition, retrofitting of structures to minimize damage from natural hazards, elevation of flood-prone structures, and development and initial implementation of vegetative management programs. In addition, hazard mitigation planning initiatives are also eligible.

States prioritize and select project applications; however, all potential projects must meet certain minimum criteria addressing five issues:

1. Does the project conform to your State's Hazard Mitigation Plan?
2. Will the project beneficially impact the disaster area?
3. Does the application meet federal environmental requirements?
4. Does the project solve a problem independently?
5. Is the project cost-effective?

After a disaster declaration, the state will advertise the availability of HMGP funding and provide guidance on eligibility criteria. If you are interested in applying, you should contact the SHMO to find out about the application deadline and about the state's funding priorities.

**Choosing a project and submitting your application.** Consider your list of potential projects, and then choose the project that conforms to the state's priorities, meets all of the minimum criteria, and can be adequately funded (25% of the total cost). For additional information, contact your SHMO or the FEMA Mitigation Division in your Region, or visit FEMA's Web site at http://www.fema.gov/fima/hmgp. FEMA 345 (*Hazard Mitigation Grant Program Desk Reference*) contains more information as well.

**Federal and state agencies** may have collected enough information from various sources to determine the reoccurrence interval for the recent event. This indicates the severity or degree of magnitude of the event. Technical assistance may be available to survey high-water marks (in the case of flooding) or to conduct a building performance assessment. Knowing the reoccurrence interval for the hazard will help you reevaluate the accuracy of the hazard information in the current plan. To do this for a flood, for example, you would compare the extent of the actual flooding to existing flood maps to determine whether the maps accurately portray the true hazard scenario.

*(continued from page 3-11)*

**2. Following the initial recovery phase, re-evaluate the hazard profiles and vulnerability assessment.**

Did the hazard information presented in the plan reflect the location, intensity, and duration of the recent event? There may be a need to collect additional data regarding the event and incorporate that information into the vulnerability assessment.

**3. Following a disaster is a good time to evaluate the results of implemented projects.**

How well did your mitigation actions perform? The best time to measure losses avoided is in the aftermath of a recent disaster, when you can actually see the difference that mitigation actions made. For example, if a house was protected from a flood because it was elevated above the Base Flood Elevation (BFE) before a disaster occurred, it should be relatively easy to obtain the actual flood height and determine what kind of damages would have occurred if the house had not been raised. Louisa County, Iowa, and Long Beach, Mississippi, illustrate the losses avoided due to flood mitigation actions implemented after floods in 1993 and 1998, respectively.

*(continued on page 3-15)*

## Louisa County, Iowa

In 1993, a severe flood occurred in Louisa County, located along the Mississippi River, resulting in damage to more than 275 homes and the evacuation of nearly 200 families. Following this flood event, the County used both acquisition and relocation of affected properties to mitigate future flooding problems. In May 2001, the flood pattern of 1993 repeated itself, and the Mississippi River and its tributaries flooded Louisa County yet again. By comparing calculated damages from the 1993 flood to the 2001 flood, the effectiveness of the acquisition and relocation program could be measured. As shown in Tables 1 and 2 below, significant reductions in emergency shelter, family assistance, and public assistance expenditures were realized in 2001 as a result of the acquisitions and housing relocations that occurred in the aftermath of the 1993 flooding.

Furthermore, Table 3 shows the losses avoided as a result of the housing acquisitions that occurred. If Louisa County had chosen not to take any action following the 1993 flood, potential property damage to these structures in the 2001 flood would have exceeded one million dollars. Calculation of reduction in public assistance expenditures and losses avoided as a result of proactive mitigation can further highlight the value of hazard mitigation planning efforts to concerned citizens, local and federal governments, and potential funding agencies.

**Table 1. Emergency Shelter and Family Assistance in Louisa County**

| | 1993 | 2001 |
|---|---|---|
| **Number of families evacuated and temporarily sheltered due to displacement** | 200 | 11 |
| **Number of Red Cross cases (individuals requesting post-disaster assistance)** | 800 | 3 |
| **Disaster Housing Assistance (FEMA)** | **$742,500** | **$0** |

*Source: Hazard Mitigation in Iowa: Measuring Success, FEMA 2003 (unpublished)*

**Table 2. Public Assistance Expenditures, 1993 and 2001 (2001 values)**

| | | 1993 | 2001 |
|---|---|---|---|
| **A** | **Debris Clearance** | $542,215 | $0 |
| **B** | **Emergency Protective Measures** | $44,367 | $0 |
| **C** | **Roads and Bridges, Culverts, Ditches** | $2,941 | $0 |
| **D** | **Water Control Facilities & Levees** | $0 | $0 |
| **E** | **Public Buildings & Contents** | $0 | $0 |
| **F** | **Utility Distribution Systems** | $0 | $0 |
| **G** | **Public Parks** | $0 | $0 |
| **H** | **Total Public Assistance** | **$589,523** | **$0** |

*Source: Hazard Mitigation in Iowa: Measuring Success, FEMA 2003 (unpublished)*

**Table 3. Losses Avoided from Acquisition of Flood-Prone Properties in Louisa County, Aggregated by Building, Contents, Displacement, and Total for the Spring, 2001 Flood (DR-1367)**

| Depth of Flooding (Feet) | Avoided Losses to Buildings | Avoided Losses to Contents | Avoided Displacement Costs | Total |
|---|---|---|---|---|
| 0 | $24,672 | $11,103 | $0 | $35,775 |
| 1 | $319,533 | $143,790 | $82,500 | $545,823 |
| 2 | $386,880 | $174,096 | $126,500 | $687,476 |
| **Total** | **$731,085** | **$328,989** | **$209,000** | **$1,269,074** |

*Source: Hazard Mitigation in Iowa: Measuring Success, FEMA 2003 (unpublished)*

## Long Beach, Mississippi

Located along the Gulf of Mexico, the coastal city of Long Beach, Mississippi, has been affected by seven hurricanes and repetitive flooding, often as a result of spring storms. In addition to its vulnerability to flooding because of its coastal location, the City also suffered from poor drainage, resulting from three poorly maintained drainage channels. While these channels were better managed in the 1980s, the City, and particularly the areas around the canals, is still plagued by poor drainage. Following Hurricane Georges in 1998, the City began to take a proactive approach to flood damages, and identified 95 properties, many of them repetitive loss properties located adjacent to the canals, for an acquisition and demolition program. This long-term acquisition project had an estimated cost of $7.7 million (see Table 1), with a portion of the funding coming from the Hazard Mitigation Grant Program. In 2001, midway through the acquisition and demolition project, Tropical Storm Allison struck the Gulf Coast. The storm caused an overflow from the drainage system, which flooded the neighborhoods located near the canals. Because 44 homes had already been purchased and demolished prior to the storm, the losses avoided from this single flood event were estimated to be $690,033 (see Table 2). This figure only represents the losses avoided to houses, their contents, and displacement costs. It does not include the additional savings to the local government in emergency services and disaster assistance costs that would have been incurred had families remained in the floodplain. By combining much-needed improvements to its drainage system with the acquisition of many repetitive loss properties, the City of Long Beach shows that mitigation projects can lead to substantial savings for the local government and affected communities.

**Table 1: Estimated Costs for Acquisition of 95 Properties in the City of Long Beach for the Master Watershed Plan**

| Item | Total Cost |
|---|---|
| Acquisition of Properties | $6,578,924 |
| Relocation Pay to Tenants | $ 52,000 |
| Demolition of Properties | $ 918,065 |
| Fees for Appraisals and Legal Assistance | $ 171,000 |
| **Total** | **$7,719,989** |

*Source: Hazard Mitigation in Mississippi: Measuring Success, FEMA 2003 (unpublished)*

**Table 2: Losses Avoided during Tropical Storm Allison from Acquisition of 44 Flood-Prone Properties in the City of Long Beach, MS**

| Item | Total Cost |
|---|---|
| Estimated Avoided Losses to Buildings | $502,917 |
| Estimated Avoided Losses to Contents | $ 85,826 |
| Estimated Avoided Displacement Costs | $101,290 |
| **Total** | **$690,033** |

*Source: Hazard Mitigation in Mississippi: Measuring Success, FEMA 2003 (unpublished)*

*(continued from page 3-13)*

**4. Depending upon the severity of the recent disaster, it may be necessary to re-evaluate the range and priority given to specific hazard mitigation actions.**

Should the priority ranking of mitigation actions be re-evaluated given the type and intensity of the recent event? If the hazard event was not anticipated or given a low priority as a goal or objective, there may be a need to go through another round of identifying and prioritizing hazard mitigation actions for your community.

**5. Consider including a special section in your mitigation plan devoted to post-disaster issues.**

Many mitigation policies or projects are not politically or economically viable until after a disaster. Thinking through post-disaster operational and policy issues in the pre-disaster time frame enables your community to delve into these often emotional subjects in the relative luxury of a non-disaster scenario. FEMA 321, *Planning for Post-Disaster Recovery and Reconstruction*, provides more details.

**Task D. Keep the community updated and involved, and celebrate your successes.**

Project implementation brings the community's hard work to fruition. The planning team should be sure to keep all stakeholders in the community informed of the progress of the projects. Ways to engage the community may include staging events to showcase your accomplishments or taking advantage of media opportunities to publicize the completion or significant steps of specific projects. Refer to *Getting Started* (FEMA 386-1) for additional ways to communicate your success to the community.

**Local and state agencies** should keep in contact with each other about the progress of their mitigation actions. Each entity should update its risk assessment data using this information. Agencies responsible for maintaining the state and local plans should update their plans accordingly, as well.

Methods of communicating with constituents during implementation of the recommended projects and programs include:

- Write a newsletter to provide details on projects;
- Create 15- or 30-second public service announcements and send them to local broadcasters;
- Work with your local news or public access cable station feature a news story about your efforts;
- Hold an annual event honoring local people who have contributed to hazard mitigation projects;
- Develop a Web site to post news articles, meeting notices, and event notices; and
- Establish a speaker's bureau to talk to schools, business groups, and other organizations about mitigation.

## Summary

The evaluation phase of the planning process helps your planning team determine whether its planning process and recommendations have been effective, and if your community's goals are being reached. Systematically evaluating the plan keeps your community informed and hopefully motivates those responsible for implementing the mitigation actions.

After you have evaluated your actions to determine what worked and did not work, go to Step 4, *Revise the Plan,* in which you will use the evaluation results to revise the hazard mitigation plan.

The Hazardville Post

Vol. CXVI No. 272 Friday, September 29, 2006

# Town Hall Retrofit Called a "Money Pit"

**(Part 3 of a 4-Part Series on the Hazard Mitigation Implementation Process)**

**[Hazardville, EM]** In response to a complaint about the progress of the seismic retrofit project of the historic Hazardville Town Hall, the Hazardville Board of Supervisors recently held an informal hearing on the matter. The retrofit, begun under Hazardville's initiative to become more disaster resistant and overseen by the Town of Hazardville Organization for Risk Reduction (THORR), is now estimated to have cost taxpayers about double the original projected cost.

When asked about the escalating costs, Joe Norris, lead planner of THORR, commented that the overruns could be attributed to misjudgments THORR had made about the extent of repairs that the building needed. "We didn't realize the extent of work that would have to be done to bring the building up to current code, much less to be seismically resistant." Norris explained that much of the work had nothing to do with seismic standards. "Not only did the contractor discover asbestos-based insulation and ceiling tiles on the first floor where most of the work was to be done, but he also found lead-based paint on pipes that had not been removed during renovation in the late 1960s. These factors were not considered in our original project estimates, but they had to be addressed in the retrofit in order to comply with local, state, and federal laws," Norris said.

Board of Supervisors Chairperson Seymour Hale likened the building retrofit to a "money pit," saying that THORR should have done its homework. Norris agreed, "As soon as we found out about these unexpected costs for the project, we began to re-evaluate all of our other projects to keep this from happening again. It seems that we placed a huge amount of work on our local building inspector. He had a tremendous work load, and did not have enough time to do in-depth investigation into some of the buildings before work began." When asked how THORR planned to remedy this problem, Norris replied, "We are still in the process of evaluating our other hazard mitigation projects and will submit our findings to the Board by the end of the month."

step 4


1
adopt the mitigation plan
2
implement the plan recommendations
3
evaluate your planning results
4
revise the plan